REMARKS

Applicants respectfully request reconsideration of the present application in view of the arguments presented herein.

I. STATUS OF THE CLAIMS

Claims 1-8 and 12-26 are pending in this application.

II. Claim Rejections under 35 U.S.C. §103

(i) Claims 1, 3-6, 12, and 14-17 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,196,360 to Doan et al (hereinafter Doan) in combination with U.S. Patent No. 5,766,997 to Takeuchi (hereinafter Takeuchi).

Doan and Takeuchi each fail to teach or suggest all of the features of the presently claimed invention as recited in claims 1 and 12. Specifically, as conceded by the Examiner in the current Office Action, Doan at the very least fails to teach or suggest forming a Ni-based metal layer for silicide, as recited in claims 1 and 12 and also fails to teach or suggest cleaning the substrate using a wet cleaning process as recited in claim 12. In addition, Takeuchi, as conceded by the Examiner, fails to teach or suggest forming a N-rich titanium nitride layer on the Ni-based metal layer for silicide as recited in claims 1 and 12.

In addition, there is no motivation provided to one skilled in the art by either Doan or Takeuchi for making the above proposed combination with respect to claims 1 and 12.

Rather, the teachings of Doan and Takeuchi are contrary to one another and thus teach away from one another. Specifically, Doan teaches depositing a titanium layer 28 over an entire integrated circuit structure and then, prior to silicidation, depositing a nitrogen- rich titanium layer 30 over the entire titanium layer 28 for inhibiting the outgrowth of titanium silicide between the gate electrode 14 and the source 16/drain regions 18 of standard MOS transistor structures. In contrast, Takeuchi teaches forming a first metal layer 41 on the entire surface of a silicon substrate and then forming a metal nitride suppressing layer 42 on the first metal layer 41

including the drain region 20 of the semiconductor device, but excluding the source region 19. Specifically, the reaction suppressing layer is formed on the drain side field oxide 12, the drain region 20, the drain side space oxide 17 and about half the surface of the gate electrode 14. A second metal layer 43 is then formed on the entire surface of the first metal layer 41 including the reaction suppressing layer 42, prior to silicidation.

However, as can be gleaned from the above, certain areas of the semiconductor device in Takeuchi are left exposed during silicidation without a reaction suppressing layer. For example, in Takeuchi as shown in Figs. 4-5, Takeuchi teaches that the oxide spacer 16 on the source region of the gate electrode should be left exposed during silicidation without a reaction suppression layer 42 being formed on this portion of the semiconductor device. This is contrary to the teachings of Doan, which requires the suppression layer, e.g. nitrogen-rich titanium nitride layer 30 to cover the entire titanium layer 28 along the entire length of the integrated circuit substrate, including the oxide spacers 24 on both the drain and source region, prior to silicidation, for inhibiting the outgrowth of titanium silicide between the gate electrode and the source/drain regions of standard MOS transistor structures.

Doan stresses the importance of forming the nitrogen-rich titanium nitride 30 or suppression layer over the oxide spacers 24 on both the source and drain region sides of the gate electrode, prior to silicidation, for preventing the diffusion of silicon and formation of titanium silicide over the spacer oxides 24 during silicidation, which causes short circuit paths between the gate electrode and source/drain contacts. **(See Doan at Col. 1, line 68-Col. 2, lines 1-29).** Clearly, Takeuchi teaches providing its suppression layer 30 on an oxide spacer on only one side of its gate electrode, rather than on oxide spacers on both sides of its gate electrode, as required by Doan.

Since the teachings of Doan and Takeuchi are clearly contrary to one another for the reasons set forth above, there can be no motivation for combining these references. Thus, the motivation set forth on page 4 of the instant Office Action for making the proposed combination of Doan and Takeuchi is insufficient for establishing a prima facie case of obviousness.

As Doan and Takeuchi each fail to teach or suggest all of the features of the presently claimed invention as recited in claims 1 and 12 and there is no motivation to combine to these references, withdrawal of the above rejection to claims 1 and 12 is respectfully requested. Further, as claims 3-6 depend from and incorporate all of the limitations of claim 1 and claims 14-17 depend from and incorporate all of the limitations of claim 12, withdrawal of the rejection to these dependent claims is likewise respectfully requested.

(ii) Claims 2, 7-8, 13, and 18 stand rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of Doan with Takeuchi as applied to claims 1, 3-5, 12, and 14-16 above, and further in view of U.S. Patent No. 6,503,840B2 to Catabay et al (hereinafter Catabay), U.S. Patent No. 6,664,166 B1 to Jaiswal et al (hereinafter Jaiswal) and U.S. Patent No. 6,775,046 B2 to Hill et al (hereinafter Hill).

As mentioned above, there is no motivation to combine Doan and Takeuchi with one another. Since, there is no motivation to combine Doan and Takeuchi, there must likewise be no motivation to combine Doan, Takeuchi, Catabay, Jaiswal, and Hill with one another as well.

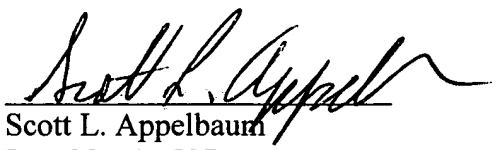
Therefore, withdrawal of the above rejection to claims 2, 7-8, 13 and 18 is respectfully requested.

III. CONCLUSION

For the foregoing reasons, applicants respectfully submit that the instant application is in condition for allowance. Early notice to that end is earnestly solicited.

If a telephone conference would be of assistance in furthering prosecution of the subject application, applicants request that the undersigned be contacted at the number below.

Respectfully submitted,



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